

Formerly  
DOE-HDBK-1117-99

# **MAINTENANCE SUPERVISOR SELECTION AND DEVELOPMENT**



**U.S. Department of Energy  
Washington, D.C. 20585**

## FOREWORD

The purpose of *Maintenance Supervisor Selection and Development* is to provide contractor training organizations with information that can be used to verify the adequacy of and/or modify existing maintenance training programs, or to develop new training programs. DOE contractors should not feel obligated to adopt all or any parts of this document. Rather, they can use this information to develop programs that are applicable to their facility.

This document can be used as an aid in the design and development of a facility's Maintenance Supervisors training program. This document can be used in developing a program for initial and continuing training.

Beneficial comments (recommendations, additions, deletions) and any pertinent data that may improve this document should be addressed in the Comments Section of this forum.

## Table of Contents

FOREWORD.....	i
1. INTRODUCTION.....	1
1.1 Purpose .....	1
1.2 Background.....	2
1.3 Application .....	3
2. SELECTION OF MAINTENANCE SUPERVISORS .....	4
2.1 Education and Experience .....	4
2.2 Evaluation and Selection of Maintenance Supervisors .....	4
2.3 Selection of Maintenance Supervisors from Outside the Facility's Work Force .....	6
2.4 Selection of Maintenance Supervisor Candidates from a Bargaining Unit .....	6
2.5 Supervisors of Multidiscipline Work Teams .....	7
3. INITIAL TRAINING PROGRAM.....	8
3.1 Individual Training Plans and Prerequisites .....	8
3.2 Exceptions from Training .....	9
3.3 Training Program Application.....	9
3.4 Job Familiarization.....	10
3.5 Temporary Supervisors .....	10
4. CONTINUING TRAINING AND DEVELOPMENT PROGRAM.....	12
4.1 Continuing Training.....	12
4.1.1 Subject Material and Depth .....	13
4.1.2 Regulatory Training.....	13
4.1.3 Methods of Training .....	13
4.2 Professional Development Activities.....	13
5. PROGRAM RECORDS .....	16
APPENDIX A-MAINTENANCE SUPERVISOR TRAINING PROGRAM.....	A-1
*A.1 Supervisory/Management Skills.....	A-2
*A.2 Supervisor/Manager Monitoring and Self-Assessment Practices.....	A-5
*A.3 Observation Skills .....	A-6
*A.4 Conduct of Maintenance and Work Control Systems.....	A-7

*A.5 Procedure Preparation, Use, and Revision .....	A-9
*A.6 Facility Modifications .....	A-10
*A.7 Industrial Safety .....	A-11
*A.8 Industry and In-House Operating Experience .....	A-12
A.9 Root-Cause Analysis .....	A-13
A.10 Facility Chemistry .....	A-14
*A.11 Radiological Protection .....	A-15
A.12 Emergency Preparedness .....	A-16
*A.13 Maintenance Training and Qualification .....	A-17
A.14 Subcontractor Maintenance Training Program Coordination .....	A-18
*A.15 Conduct of Operations .....	A-19
A.16 On-site and Off-site Technical Support .....	A-20
A.17 Administrative Requirements .....	A-21
A.18 Codes, Standards, and Regulations .....	A-22
*A.19 Quality Assurance and Quality Control .....	A-23
A.20 Purchasing .....	A-24
A.21 Material Control .....	A-25
*A.22 Fitness-For-Duty Program .....	A-26
A.23 Budgeting .....	A-27
A.24 Document Control and Storage .....	A-28
A.25 Facility Security and Non-radiological Emergencies .....	A-29
APPENDIX B-JOB FAMILIARIZATION .....	B-1
B.1 Job Familiarization .....	B-1
B.2 On-The-Job Familiarization .....	B-3

## 1. INTRODUCTION

### 1.1 Purpose

This guide has been developed based on functional responsibilities typical of the electrical, instrument and control, mechanical, and maintenance supervisor positions. This guide applies to all levels of maintenance supervision, up to but not including the maintenance manager. The following are included in these guidelines:

- An assessment and selection process for supervisor candidates.
- An outline for an initial supervisory training program for the selected candidates to enhance their current skills.
- An outline for a continuing training program to maintain and improve the abilities of supervisors.

Incumbent supervisors should be trained on selected subjects of these guidelines, based on identified needs.

When selecting personnel for assignment to the maintenance supervisor position, facility management should compare the candidates' demonstrated leadership, work standards, and analytical abilities, as well as experience, past performance, education, training, and knowledge of the facility, as they relate to the responsibilities of the position. Facility line managers should select those individuals who have the potential to demonstrate high qualities of leadership, supervision, judgment, motivation, integrity, and professionalism demanded of supervisors within the Department of Energy (DOE) community.

Individuals selected as maintenance supervisors typically have several years of experience in their technical field of expertise. They are knowledgeable in the technical aspects of their profession but may not have the broad range of skills and knowledge required to function effectively as supervisors. Maintenance supervisors need a detailed perspective of both maintenance management and facility operations, and an understanding of personnel and administrative procedures. It is important that maintenance supervisors have a detailed knowledge of the work control administrative requirements, including engineering review requirements and facility safety review requirements.

Preparation and development of candidates for facility maintenance supervisor positions, and continuing training and development for existing supervisors, can be enhanced through career planning and individualized training programs. Also, the development of supervisory skills is enhanced by the individual's routine contact with supervisors and managers who reinforce the standards of the facility.

Facilities should use these guidelines as a list of topics to consider for their supervisory training programs and choose those topics that are appropriate for the particular job function. Existing training materials that cover the subjects/topics discussed in these guidelines should be used rather than developing additional materials. Additional subject material should be developed, if required, to meet the specific needs of each facility. This information should reflect facility-specific organization, job duties, equipment, procedures, and trainee entry-level knowledge and skills. Certain topics are listed under more than one subject for emphasis but only need to be addressed once in the training program.

This guide to good practices provides a framework in which development of individual training programs can be designed to fit the individual needs of candidates selected for assignment to supervisory positions. Some elements of these guidelines can be used as an outline for individual research, individualized instruction, or discussion with job incumbents; other elements may require attendance at formal training courses.

Maintenance supervisors require specific technical support training, as noted in DOE Order 426.2, *Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities*. Overall, development programs should provide the candidate or incumbent supervisor with the knowledge and skills including the following:

- Leadership
- Interpersonal communication
- Responsibilities and authority
- Motivation of personnel
- Problem analysis and decision making
- Fitness for duty procedures
- Administrative policies and procedures.

Additionally, specific subject areas that maintenance supervisors should receive training on are included in Appendices A-1 through A-25.

## **1.2 Background**

The information in this guide was developed from commercial and DOE sources. Each facility should select those topics that are applicable, add any unlisted topics that are applicable, develop facility-specific lesson plans, and implement maintenance supervisory training.

Facilities that have an existing supervisory training program should review this guide to identify topics that may need to be included in the existing program. Existing training materials that adequately cover the subjects/topics discussed should be used rather than developing additional materials.

### **1.3 Application**

This guide is intended to support individual training programs that prepare a maintenance supervisor candidate to perform in these challenging supervisory positions. This guide applies to all levels of maintenance supervision up to but not including the maintenance manager. Formal programs need to be established and implemented for the training and development of supervisors so that they can instill professional performance in their personnel, effectively supervise the work of others, and effectively implement management policies and standards.

Supervisor candidates who have qualified under training programs are knowledgeable of the technical aspects of their discipline; however, where needed, specific technical training can be provided using existing training curricula to enhance their abilities for future promotions.

Material covered by this document is also applicable to incumbent maintenance supervisors. Facilities should provide training on specific subjects that will improve the performance of incumbent maintenance supervisors on the basis of identified needs. It is recognized that incumbent supervisors and candidates may have received training in some subjects described in these guidelines.

Facilities should review the technical competence of supervisor candidates and incumbent supervisors to verify that their competence matches their job responsibilities. In addition, increased systems and process training may be necessary to provide the candidate or supervisor with the knowledge needed for increased job responsibilities.

DOE Order 426.2, *Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities*, stresses the need for systematically developed and implemented training programs for various facility job descriptions. Supervisor is one of the job descriptions delineated. Minimum education, experience, and other special requirements are listed. Topics for management and supervisory skills training are also listed. This guide further explains topics to cover during the maintenance supervisor's initial and continuing training programs.

## **2. SELECTION OF MAINTENANCE SUPERVISORS**

The program for developing candidates and incumbent supervisors should be developed using a systematic approach. Using a systematic approach for the development of training programs for maintenance supervisors should improve the quality of supervision and employee performance. The selection of maintenance supervisors should be a careful and thoughtful process that recognizes the responsibilities unique to the maintenance supervisor position. Maintenance supervisors are those personnel who, as their primary job function, have direct responsibility and authority for assigning jobs, overseeing and directing maintenance activities, and coaching or correcting maintenance craft personnel.

### **2.1 Education and Experience**

Educational and experience requirements should be consistent with those stipulated in DOE Orders and in other applicable regulatory documents. As a minimum, a high school education or General Education Development (GED) equivalent is recommended for entry into the maintenance supervisor training program. Educational achievements should be reviewed as part of the selection process for identifying prospective maintenance supervisors. Educational weaknesses directly related to job responsibilities should be corrected through appropriate training.

### **2.2 Evaluation and Selection of Maintenance Supervisors**

The process for selecting employees for promotion to a maintenance supervisory position should include an evaluation of the employee's behaviors that demonstrates potential supervisory skills and characteristics. Senior line managers and incumbents (who best understand the job) should establish criteria defining those skills and characteristics that are expected of maintenance supervisors. The criteria should include demonstrated qualities such as leadership, judgment, motivation, integrity, supervisory skills, and teamwork skills, as well as technical competence. Selection of maintenance supervisor candidates should include consideration of the following characteristics as described by the associated attributes:

Leadership and supervisory capabilities

- assumes responsibility and accountabilities of the maintenance supervisor
- supports and is knowledgeable of facility policies and maintenance philosophies
- displays initiative and motivational skills
- communicates and reinforces expectations, and interacts with personnel



- demonstrates administrative and organizational abilities
- demonstrates ability for coaching skills, including critical assessment of craft performance
- has potential to assume further responsibilities
- is a role model for maintaining high standards

#### Thorough technical knowledge

- has working knowledge of the tasks performed by the personnel supervised
- demonstrates the ability to recognize unexpected or off-normal conditions
- demonstrates proficient analytical ability
- shows strong awareness of industrial safety
- is aware of lessons learned from in-house and industry maintenance experience, and demonstrates the propensity to seek out this information

#### High values and integrity

- is committed to and demonstrates values that support organizational goals
- displays professional ethics
- has high personal standards of performance, and is committed to quality
- has a positive attitude

#### Good judgment

- takes a conservative approach toward nuclear safety and personnel safety
- has an inquisitive, questioning attitude
- is decisive; makes logical decisions
- understands personal and policy limitations
- maintains perspective; considers alternatives

#### Teamwork skills

- demonstrates and advocates cooperation, collaboration, and involvement among craft and facility personnel
- encourages and provides critical and positive feedback in a constructive manner
- recognizes achievement and consistently corrects behavior that is not conducive to teamwork
- promotes independent verification and peer checking

## Motivation

- exhibits a strong sense of responsibility for personal development
- possesses an interest in and desire for additional challenges and responsibilities
- is persistent

Some techniques that can be used in conducting evaluations include assessment center processes, aptitude tests, examinations of technical and supervisory topics, questionnaires, on-the-job observations, interviews, and direct interaction with candidates. The techniques selected should be applied in a consistent manner.

The evaluations should identify areas where additional training is needed and should form the basis of the initial supervisory training program for the candidate. The evaluation should also identify those who are not suitable for the position. Incumbent supervisors should be evaluated using the same or a similar process.

## **2.3 Selection of Maintenance Supervisors from Outside the Facility's Work Force**

Occasionally, a facility needs to hire maintenance supervisors from outside the facility's work force. As a result, these newly hired supervisors may not have gone through all aspects of the supervisor evaluation and training program discussed in these guidelines. In these cases, facilities should conduct evaluations of the newly hired supervisors to determine if the candidates meet the minimum criteria for the position. The method used can be the same method the facility uses for evaluating candidates from the facility work force. In addition, this selection process should verify that the supervisors have a cultural understanding of the facility's vision, mission, and goals.

If indicated by the results of this evaluation, newly hired supervisors should be enrolled in selected portions of an initial training program. In addition, newly hired supervisors should be given the opportunity to visit facility and DOE offices as appropriate before assuming supervisory positions.

## **2.4 Selection of Maintenance Supervisor Candidates from a Bargaining Unit**

Bargaining unit personnel are frequently selected for supervisory positions. The evaluation, selection, and training program discussed in this document may need to be adjusted because of contract requirements. However, the intent of this handbook should be applied when bargaining unit personnel are involved.

## **2.5 Supervisors of Multidiscipline Work Teams**

Supervisors of multidiscipline work teams will likely not have the detailed working knowledge of all tasks performed by the team. Supervisors need a fundamental working knowledge of the tasks being performed as well as broad knowledge of applicable facility work practices, industrial safety practices, and "soft skills" necessary to effectively interact with team members.

### **3. INITIAL TRAINING PROGRAM**

The goal of the initial training program is to provide supervisors with the knowledge and skills necessary to perform their supervisory duties in a manner that promotes safe and reliable facility operations. The training program framework is detailed in Appendices A and B, which describe the content and process for conducting training to address particular management, technical, and administrative subjects. The training scope should be based on individual needs that were identified from the selection process. This training program should normally be completed prior to assignment to a supervisory position.

#### **3.1 Individual Training Plans and Prerequisites**

Determining initial training program content for an individual should be a joint effort among the supervisor/manager, the individual, and the facility training department. Appendices A and B provide the basis for maintenance and training managers to establish the initial maintenance supervisor training program. The initial training program should address areas identified in the evaluation as needing improvement. Regardless of the subjects/topics selected, initial training should always reinforce the cultural understanding of the facility vision, mission, and goals such that the individual supports facility philosophies, policies, and standards.

Facility line management may assign personnel as maintenance supervisors before completing all of the initial training recommended in Appendices A and B. However, subjects identified in Appendices A and B with asterisks (\*) should be provided as prerequisites before they perform supervisory duties independently. Facility line and training managers establish individual training plans by selecting topics that a supervisor needs to master essential supervisory skills. The maintenance manager should approve the training plan for the individual. The remaining initial training subject matter should be scheduled for completion within a reasonable time (e.g., within one year).

Upper management should conduct training/coaching sessions with all potential supervisors to communicate, discuss, and promote areas that include the facility's commitment to high standards of performance and safety. Standards of professionalism and excellence throughout the organization should be stressed during these sessions. Some of these sessions are conducted one-on-one or in small groups because of the subject matter. Additionally, personnel should be provided with good role models to foster development.

### 3.2 Exceptions from Training

Candidates for the maintenance supervisor position may be excepted from training in accordance with DOE Order 426.2, *Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities*. The preferred method of excepting personnel from training is by proficiency testing. In all cases, the requisite examinations to establish qualification shall be completed.

Facility management should ensure that the individual is either competent to perform job-related duties or completes the designated training program requirements prior to assignment to those duties. For example, if a person has been working at facility A for 10 years as a maintenance supervisor, and is transferred to a similar facility B to work in the same position, much of the initial training program can be excepted relative to the person's previous experience. However, if the same person were transferring to a totally different facility to start in a new job position, the exceptions allowed would be very different. Each situation is unique and must be looked at individually.

### 3.3 Training Program Application

Maintenance supervisor training could be applied differently for each level of maintenance supervision, since each supervisory position may have different job responsibilities. Some subjects or particular elements of subjects may apply to only one supervisory position while other subjects may apply to more than one supervisory position with greater emphasis placed on a particular subject for a given position based on the required duties. For example, supervisors (such as maintenance crew foremen/supervisors) may need to develop a general understanding of how the facility incident reporting system is administered. Whereas, supervisors (such as shop foremen/supervisors) may need more detailed information on this subject because of their increased responsibilities in performing investigation and trending activities associated with the facility incident reporting system.

Line and training managers should evaluate the technical knowledge and skill of each supervisor to identify additional technical training needed to perform supervisory duties. If maintenance supervisors will supervise multi-skilled or cross-disciplined work groups, facility managers should consider the appropriate level of technical competence that the maintenance supervisor candidates possess. For example, a mechanical supervisor may supervise a team of electricians and mechanics performing maintenance on a motor-operated valve. In this case, the maintenance supervisor may need a working knowledge of topics associated with the particular work activity, such as electrical safety work practices.

The initial training can be accomplished using a variety of instructional settings, such as classroom, structured self-study, tutoring, or on-the-job training. Some of the training

may cross functional boundaries and be supported by existing training. Some portions of initial training may be accomplished through on-the-job interaction with appropriate personnel or as a maintenance supervisor under instruction.

### **3.4 Job Familiarization**

The purposes of job familiarization are to introduce the candidate to the day-to-day functions of the position and to provide opportunities to gain additional knowledge of management philosophies and practices.

The extent of required job familiarization depends on the background and experience of the candidate and should be determined by the maintenance manager on a case-by-case basis. Job familiarization should consider the areas described in Appendix B. Newly hired supervisors from outside the facility's work force should be given the opportunity to visit facility areas and DOE offices to familiarize themselves with responsibilities and functions in various areas.

### **3.5 Temporary Supervisors**

Facility personnel who are temporarily upgraded to perform supervisory duties should also be provided basic elements of supervisory training. Line and training managers should determine the training needs for these supervisors based on the individual's education, experience, and work to be performed (including contracted supervisors). The maintenance manager should approve the training subjects and topics selected. Items to consider when determining what training these supervisors need include the following:

- The range of duties assigned to the supervisor (for example, all supervisory tasks, monitoring and reporting only, technical guidance only, select combinations of supervisor tasks)

If management expects the supervisor to perform a majority of the tasks that a permanent full-time supervisor typically performs, then it would be appropriate to provide the training as outlined in Appendices A and B. However, if the supervisor functions only as a lead mechanic or a technical expert for a specific work assignment, then complete supervisory training may not be needed.

- The supervisor's knowledge of supervisory tasks and management performance expectations

Interviews and on-the-job demonstrations or simulations with the supervisor candidates could determine areas in which knowledge and skill improvements are needed. For example, a candidate may have successfully described the attributes for observing a work activity but did not know how frequently the

maintenance manager expects an observation to be conducted. In this case, job scope limitations may be all that are needed until corrections are provided through coaching sessions. However, if the same candidate could not demonstrate how to access the historical records of the computerized maintenance system when this task forms a large part of a supervisor's daily job, then a structured training session may be needed before the candidate is upgraded or allowed to perform supervisory duties.

- The length of time the supervisor is expected to perform supervisory duties  
Temporary supervisors are not expected to receive supervisory training unless they will be used repeatedly as supervisors, or unless they will fulfill the position for an extended period. Temporary supervisors are expected to receive appropriate coaching for the functions they provide prior to performing supervisory duties independently. For example, an individual who routinely acts as a supervisor in the absence of another supervisor or who performs supervisory duties during maintenance or outages receives training appropriate to the duties performed. Facility line management should set limitations on the frequency and/or length of time temporary supervisors can be in supervisory positions without receiving requisite training.
- The technical background of the temporary supervisor
- Knowledge of the facility's maintenance program

## **4. CONTINUING TRAINING AND DEVELOPMENT PROGRAM**

### **4.1 Continuing Training**

The frequency of continuing training should be on a biennial cycle and should be based on job performance. Continuing training in technical and administrative subjects should be provided to help ensure that maintenance supervisors maintain and improve their job proficiency. Continuing training should not be a repeat of the initial training program, rather it should build on job experiences subsequent to the initial training program and build on the knowledge and skills that the individual gained during initial training. Specific areas that should be part of a continuing training program include, but are not limited to the following:

- Facility and industry operating experience
- Conduct of operations
- Facility self-assessment
- Abnormal and emergency procedures
- Changes to applicable facility procedures, codes, and standards
- Significant facility systems, components, and equipment changes
- Changes to Technical Safety Requirements
- Selected topics from the initial training program to correct identified weaknesses and performance problems
- Selected fundamentals with emphasis on seldom-used knowledge and skills necessary to assure safety
- Lessons learned and near-miss events
- Topics requested by shift supervisors or management.

Some of these topics may be discussed during discipline-specific continuing training (e.g., mechanical maintenance continuing training). Maintenance supervisors strengthen their technical skills by attending applicable portions of continuing training developed for the personnel enrolled in discipline-specific training programs (such as mechanical maintenance). For supervisors of multidiscipline work teams, careful consideration should be given to their technical training requirements during continuing training to enhance their effectiveness. For example, a mechanical supervisor may supervise a team of electricians and mechanics performing maintenance on a motor-operated valve. In this case, it may be appropriate for the supervisor to attend task-



related portions of continuing training with the electricians to broaden his or her understanding of a less familiar aspect of the task.

Although DOE Order 426.2 does not specifically require that the topics listed in Section 7.i of the order be included in a continuing training program, participation in related supervisory and management development programs is recommended. The specific training that may be appropriate for each supervisor should be identified on the basis of that individual's needs, and may be used to improve identified weaknesses or enhance skills. Section 4.2 of this document provides guidance for the professional development of maintenance supervisors.

For further guidance in developing, implementing, and evaluating a continuing training program, refer to the DOE *Guide to Good Practices for Continuing Training*.

#### 4.1.1 Subject Material and Depth

The subject material and depth to be covered in the continuing training program should build on job experiences subsequent to the initial training program. Further emphasis should be placed on: occurrence reports, facility self-assessment, conduct of operations, changes to applicable facility procedures and standards, changes to Technical Safety Requirements, facility and industry operating experience, review of safety-related material, abnormal and emergency procedures, etc.

#### 4.1.2 Regulatory Training

Regulatory compliance training should be a fixed component of the continuing training program. This is mandated training, such as HAZMAT or security training, that is required by DOE Orders, Occupational Safety and Health Act (OSHA), Environmental Protection Agency (EPA), etc., and can readily be scheduled in advance.

#### 4.1.3 Methods of Training

The methods that can be used to accomplish continuing training can be essentially the same as those used for the initial training program; however, there will be less emphasis on the one-on-one training conducted by the training manager with a new trainee. Portions of the continuing training may be accomplished by guided self-study or computer-based training (CBT).

### **4.2 Professional Development Activities**

Ongoing professional activities are important in the development of maintenance supervisors. Professional development activities that support long-range development goals are designed to address the needs and desires of individual supervisors and complement maintenance organization and facility goals. Goals can be determined through use of the personnel performance review process and maintenance managers'

identification of activities that will improve each supervisor's performance. Professional development activities for maintenance supervisors may include the following:

- visiting other DOE sites to broaden their perspective of maintenance supervision activities and to stimulate comparison and emulation of good practices
- working for short periods in other functional areas in the nuclear organization to broaden their perspective and understanding of overall facility functions (for example, operations, engineering, etc.)
- attending management and leadership courses
- attending technical school or college courses
- expanding supervisory activities and responsibilities, such as providing training or guidance to work groups and contractors
- developing or revising maintenance programs (for example, reliability-centered maintenance, preventive maintenance, training)
- authoring or revising maintenance procedures or documentation
- participating as a subject matter expert during programmatic reviews at other DOE facilities
- leading maintenance organization problem solving and decision-making task forces
- leading training discussions for maintenance workers on lessons learned from industry and facility events
- participating in facility committees (for example, facility operation review, training curriculum/program review)
- participating in professional organizations related to technical areas
- representing maintenance in facility meetings such as planning and scheduling or operating experience assessment
- participating in training program self-evaluation

An important element of the maintenance supervisor's professional development is the day-to-day coaching by the facility management team. Though not formally documented, coaching focuses on individual needs, reinforcement of management expectations, and understanding and practice of established management and leadership competencies that support the position. Another effective method is to conduct roundtable discussions among supervisors and the maintenance manager. These discussions may focus on an upcoming job, a recently completed job, or an industry operating experience.

Maintenance supervisors are viewed as members of and are fully integrated within the maintenance management team. As members of facility management, they are important to each facility's ability to safely operate the facility. Maintenance supervisors fully integrated into the management team are better able to internalize the facility's goals, articulate those goals, and ensure maintenance personnel work toward achieving those goals.

## 5. PROGRAM RECORDS

Auditable records of each individual's participation and performance in or exception(s) granted from the training program(s) should be maintained. Individual training records should include the following (as appropriate):

- Verified education, experience, employment history; also, most recent health evaluation summary
- Training programs completed and qualification(s) achieved
- Latest completed checklists, graded written examinations (with answers corrected as necessary or with examination keys). This requires controlled access to training records to maintain examination security
- Correspondence relating to exceptions granted to training requirements, including justification and approval
- Records of qualification for one-time-only special tests or operations
- Attendance records for required training courses or sessions.

A historical record that documents initial qualification on each position qualified should be maintained as part of the individual's training records. For example, if an individual initially qualified in 1986, the record should have the date and name of the qualification entered into it. If more than one qualification is achieved and maintained, the individual training record should contain documentation to that effect.

For presently held qualification(s), the completed examinations, checklists, operational evaluations, etc., should be maintained in the record. (Some facilities may prefer to maintain a separate file of completed examinations with answer keys for each individual.)

Upon requalification, records that supported the previous qualification may be removed from the record and replaced with the information documenting present qualification. Superseded information should be handled in accordance with procedures contained in DOE-O-243.1B AC-1, *Records Management Program*.

In addition, records of training programs (which should include an audit trail documenting the development of and modifications to each program) and evaluations of the effectiveness of those programs should also be maintained. This is especially true of the Maintenance Supervisor Training program where there may be exceptions to training during the supervisor's qualification.

## **APPENDIX A-MAINTENANCE SUPERVISOR TRAINING PROGRAM**

This appendix provides a listing of training subjects that are necessary to supervise and manage the activities of assigned personnel from which the facility can choose to develop the necessary knowledge, skills, and abilities. The training subjects can be used by electrical, mechanical, instrument, and control, maintenance supervisor candidates or incumbents. The level of knowledge will vary from general familiarization in some subjects and topics to an in-depth knowledge in others. To determine the training a candidate or incumbent needs, present skills, knowledge, and abilities should be evaluated against those required for the position. The training program should then be tailored to strengthen areas of weakness.

A statement of purpose is provided for each subject area and is followed by a number of related topics. The statements of purpose are provided as guidance for the facility in determining the depth of knowledge needed in the subject area. Subjects are grouped into three broad categories: leadership and management, technical, and administrative.

**\*A.1 Supervisory/Management Skills**

The purpose of this subject area is to enable the candidate or incumbent to understand and apply basic supervisory/management principles and practices. Topics for consideration include:

TOPIC	ITEMS TO COVER FOR EACH TOPIC
Basic Management Principles	<ul style="list-style-type: none"> <li>• Understanding the basic functions of management/supervision</li> <li>• Providing an environment that is conducive to excellence and professionalism</li> <li>• Recognizing different management styles</li> <li>• Determining the appropriate style for the individual and situation</li> <li>• Being proactive and responsive</li> </ul>
Self-Assessment	<ul style="list-style-type: none"> <li>• Recognition of personal strengths and weaknesses</li> <li>• Identification of and commitment to strategies for improving weaknesses revealed through self-assessment</li> <li>• Establishment and assessment of personal and professional goals</li> <li>• Methods of evaluating personal progress</li> <li>• Methods of evaluating personal commitment to the achievement of high standards</li> <li>• Identification, assessment, and diagnosis of personal stress vulnerabilities and methods for coping with stress</li> <li>• Personal ethics and their impact on the job</li> <li>• Recognition of supervisor's impact on other personnel</li> </ul>
Leadership	<ul style="list-style-type: none"> <li>• Recognizing leadership qualities</li> <li>• Leadership styles/situational leadership</li> <li>• Identifying basic leadership functions</li> <li>• Developing leadership skills</li> <li>• Conducting one's self with commitment and integrity</li> <li>• Recognizing warning signs of stress in others and positive methods/techniques for dealing with personal differences</li> <li>• Active day-to-day involvement in facility activities</li> </ul>
Responsibility and Authority	<ul style="list-style-type: none"> <li>• Defining basic roles of supervisors</li> <li>• Describing job functions</li> <li>• Establishing work performance standards</li> <li>• Delegating authority</li> <li>• Assigning responsibility</li> <li>• Exercising accountability</li> </ul>
Planning	<ul style="list-style-type: none"> <li>• Establishing goals and objectives</li> <li>• Developing a plan</li> <li>• Identifying work activities</li> <li>• Budgeting time and resources</li> </ul>

	<ul style="list-style-type: none"> <li>• Monitoring implementation</li> <li>• Setting new and revised goals that encourage continual improvement in performance</li> <li>• Integrated Safety Management</li> </ul>
--	--

TOPIC	ITEMS TO COVER FOR EACH TOPIC
Nuclear Safety	<ul style="list-style-type: none"> <li>• Recognizing nuclear safety as the overriding priority</li> <li>• Proactively identifying maintenance activities affecting nuclear safety</li> <li>• Exercising a questioning attitude by challenging conditions and actions affecting nuclear safety</li> </ul>
Analytical Problem-Solving and Decision-making	<ul style="list-style-type: none"> <li>• Recognizing situations that require action</li> <li>• Gathering information</li> <li>• Establishing and communicating priorities</li> <li>• Using decisional analysis techniques</li> <li>• Making decisions, including those in a stressful environment</li> <li>• Anticipating and preventing problems</li> <li>• Correcting root causes of problems</li> </ul>
Communications	<ul style="list-style-type: none"> <li>• Methods of communicating</li> <li>• Open communications</li> <li>• Listening process and skills</li> <li>• Conducting effective meetings</li> <li>• Delivering effective presentations</li> <li>• Speaking, including speaking to groups</li> <li>• Using nonverbal communications</li> <li>• Writing (procedures, letters, performance appraisals, etc.)</li> <li>• Conflict resolution</li> <li>• Using feedback</li> </ul>
Organizing	<ul style="list-style-type: none"> <li>• Organizing for change</li> <li>• Managing projects</li> <li>• Setting the span of control</li> <li>• Using various organizational skills</li> </ul>
Promoting Expectations	<ul style="list-style-type: none"> <li>• Conveying roles, responsibilities, expectations, and standards in clear, unmistakable terms</li> <li>• Insisting on uniform adherence to standards</li> <li>• Actively monitoring worker performance</li> <li>• Reinforcing desired individual behaviors at every opportunity</li> <li>• Confronting and correcting inappropriate behavior</li> </ul>
Controlling	<ul style="list-style-type: none"> <li>• Using goals and objectives</li> <li>• Allocating resources</li> <li>• Evaluating people</li> <li>• Measuring productivity</li> <li>• Holding people accountable</li> </ul>

	<ul style="list-style-type: none"> <li>• Rewarding and disciplining people</li> <li>• Time management</li> <li>• Minimizing time-wasters</li> <li>• Dealing with interruptions</li> <li>• Closing out a project</li> </ul>
--	--

TOPIC	ITEMS TO COVER FOR EACH TOPIC
Employee Relations	<ul style="list-style-type: none"> <li>• Interviewing</li> <li>• Orientation of new employees</li> <li>• Equal employment opportunity requirements</li> <li>• Bargaining unit contract requirements</li> <li>• Privacy rights</li> <li>• Supervising salaried and bargaining unit personnel</li> <li>• Directing</li> <li>• Teamwork</li> <li>• Influencing behavior</li> <li>• Motivating</li> <li>• Coaching</li> <li>• Counseling</li> <li>• Complaint prevention</li> <li>• Handling of problems and complaints</li> <li>• Preparing/presenting performance appraisals</li> </ul>
Personnel Development	<ul style="list-style-type: none"> <li>• Establishing job qualification requirements</li> <li>• Staffing to meet goals and objectives</li> <li>• Using entry-level and promotion selection instruments</li> <li>• Enhancing professional development of technical</li> <li>• Career path planning and implementation</li> <li>• Interviewing</li> <li>• Developing personnel for advancement personnel</li> <li>• Counseling, coaching, and listening to employee concerns</li> <li>• Providing good role models to foster development</li> </ul>
Controlling Costs	<ul style="list-style-type: none"> <li>• Establishing budgets</li> <li>• Integrating goals and objectives with the budget</li> <li>• Using cost accounting</li> <li>• Identifying cost problems</li> <li>• Using budget change requests</li> </ul>



**\*A.2 Supervisor/Manager Monitoring and Self-Assessment Practices**

The purpose of this subject area is to enable the candidate or incumbent to use supervisory/managerial control, monitoring, and self-assessment practices that contribute to the achievement of high standards of safety and performance. Topics for consideration include:

TOPIC	ITEMS TO COVER FOR EACH TOPIC
Improving Performance Through Goals and Objectives Program	<ul style="list-style-type: none"> <li>• Determining goals and objectives</li> <li>• Using and maintaining goals and objectives program</li> <li>• Establishing performance standards</li> <li>• Establishing and using indicators</li> <li>• Establishing feedback channels</li> </ul>
Assessing Department or Section Performance	<ul style="list-style-type: none"> <li>• Initiating and conducting self-assessments</li> <li>• Comparing facility performance to facility goals</li> <li>• Trending key parameters to identify areas for improvement</li> <li>• Monitoring performance by direct observation</li> <li>• Promoting an environment conducive to avoiding personnel errors and to identification and correction of personnel errors</li> <li>• Identifying recurring and long-standing problems</li> <li>• Differentiating between attitude and knowledge problems</li> <li>• Differentiating between equipment and personnel performance deficiencies (root causes)</li> <li>• Using plant tours and personnel observations</li> <li>• Using audits and inspections to identify areas for improvement</li> </ul>

**\*A.3 Observation Skills**

The purpose of this subject area is to enable the candidate or incumbent to conduct effective and meaningful observations. By learning observation skills and understanding the following key elements, the candidate or incumbent can apply applicable techniques during day-to-day activities. Topics for consideration include:

TOPIC	ITEMS TO COVER FOR EACH TOPIC
Definition of Terms	<ul style="list-style-type: none"> <li>• Observation</li> <li>• Follow-up</li> <li>• Excellence</li> </ul>
Distinct Steps of an Observation	<ul style="list-style-type: none"> <li>• Selecting the activity</li> <li>• Standards of performance</li> <li>• Preparing for the observation</li> <li>• Conducting the observation</li> <li>• Interacting with personnel</li> <li>• Attention to important items</li> <li>• Note-taking</li> <li>• Understanding what you are seeing, asking questions</li> <li>• Observing beyond the activity, looking for causes by asking "why?"</li> <li>• Documenting the observation</li> <li>• Follow-up</li> </ul>
Use of Observation or Key Observation Techniques	<ul style="list-style-type: none"> <li>• Performance check of individuals</li> <li>• Performance check of a process</li> </ul>
Use of External Observations to Strive for Excellence	<ul style="list-style-type: none"> <li>• Using external observations to improve personnel performance and attitudes</li> </ul>

**\*A.4 Conduct of Maintenance and Work Control Systems**

The purpose of this subject area is to enable the candidate or incumbent to monitor and enhance the facility maintenance program. Topics for consideration include:

TOPIC	ITEMS TO COVER FOR EACH TOPIC
Administrative	<ul style="list-style-type: none"> <li>• Adherence to facility procedures, practices, and policies</li> <li>• Assuring that subcontractors meet company policies, procedures, and standards</li> <li>• Requirements for engineering review</li> <li>• Responsibilities of facility and maintenance personnel</li> <li>• Planning and coordinating facility maintenance during maintenance periods</li> <li>• Planning and scheduling routine daily and shift maintenance jobs</li> <li>• Maintenance trending and analysis for root cause determination</li> <li>• Surveillance and maintenance requirements for selected systems and equipment</li> <li>• Maintenance problem identification, correction, and evaluation</li> <li>• Provisions for the review, control, update, and use of vendor bulletins, reports, notices, and maintenance-related requirements</li> <li>• Initiation, review, and approval of work orders</li> <li>• Identifying rework</li> <li>• Deficiency identification and correction</li> <li>• Independent verification requirements</li> <li>• Control of measuring and test equipment</li> <li>• Foreign material exclusion (cleanliness requirements)</li> <li>• Tag-outs, radiological work permits, hot work permits, confined space permits, and other permits</li> <li>• Control of work backlog</li> <li>• Review of completed work and evaluation of test results</li> </ul>

TOPIC	ITEMS TO COVER FOR EACH TOPIC
Work Control	<ul style="list-style-type: none"> <li>• Responsibility of supervision for Integrated Safety Management</li> <li>• Responsibility of supervision for reviewing job plans, monitoring work, and reviewing completed work (including documentation)</li> <li>• Interaction with and integration of work with facility and other personnel (e.g., other maintenance disciplines, operations, radiological protection, chemistry, engineering, contractors, test laboratory, quality control, and fire protection personnel)</li> <li>• Personal responsibilities for completion of work</li> <li>• Job briefings</li> <li>• Post-maintenance testing</li> <li>• Preventive maintenance techniques available</li> <li>• Maintenance history program content and uses</li> <li>• Reliability-centered maintenance concepts</li> <li>• Work site cleanliness</li> <li>• Proper tool usage</li> <li>• Control of troubleshooting</li> <li>• Response to abnormal maintenance conditions</li> <li>• Provisions for nonscheduled maintenance permitted by facility conditions and resource availability</li> <li>• Provisions for emergency (nonscheduled) maintenance</li> <li>• Maintenance during back shifts, weekends, and holidays</li> <li>• Surveillance testing</li> </ul>

**\*A.5 Procedure Preparation, Use, and Revision**

The purpose of this subject area is to enable the candidate or incumbent to be familiar with and apply important principles concerned with the preparation, use, and revision of maintenance procedures. Topics for consideration include:

TOPIC	ITEMS TO COVER FOR EACH TOPIC
Procedure Development	<ul style="list-style-type: none"><li>• Development and writing, including human factors considerations</li><li>• Verification</li><li>• Validation</li><li>• Approval</li><li>• Review</li><li>• Revision</li></ul>
Procedure Use	<ul style="list-style-type: none"><li>• Including action taken when a procedure cannot be followed as written or when unexpected results occur</li></ul>

### \*A.6 Facility Modifications

The purpose of this subject area is to enable the candidate or incumbent to monitor maintenance-specific facility modification activities in accordance with company policies, DOE orders, ALARA considerations, and sound industrial safety practices. Portions of this subject may be provided from an overview perspective (e.g., design support, safety reviews, capital budgeting). Topics for consideration include:

TOPIC	ITEMS TO COVER FOR EACH TOPIC
Administrative	<ul style="list-style-type: none"> <li>• Capital budgeting process and project controls Planning and scheduling requirements</li> <li>• Policies and procedures for temporary and permanent modifications</li> <li>• ALARA considerations</li> <li>• Quality assurance and quality control requirements</li> </ul>
Facility Modifications	<ul style="list-style-type: none"> <li>• Configuration management responsibilities and controls</li> <li>• Personnel responsibilities for completion of modifications</li> <li>• Modification activities such as testing, drawing update, procedure changes, and training required prior to release for operation</li> <li>• Timeliness of removal of temporary modifications</li> <li>• Post-installation and removal (of temporary modification testing)</li> <li>• Design control and support</li> <li>• Setpoint control</li> <li>• Jumpers and lifted lead control</li> <li>• Lead shielding reviews</li> <li>• Safety reviews/evaluations</li> </ul>

**\*A.7 Industrial Safety**

The purpose of this subject area is to enable the candidate or incumbent to promote and monitor the industrial safety program at the facility. Topics for consideration include:

SUBJECT	TOPIC
Industrial Safety	<ul style="list-style-type: none"> <li>• Personnel and industrial safety policies and procedures</li> <li>• Supervisor's responsibility for industrial safety</li> <li>• Employee safety responsibilities</li> <li>• Occupational Safety and Health Act (OSHA) requirements</li> <li>• Other applicable safety and fire prevention requirement (state or local)</li> <li>• Methods for monitoring the industrial safety program</li> <li>• Provisions for handling personnel injuries</li> <li>• Employee right-to-know regarding hazardous chemicals</li> <li>• Personnel protective equipment</li> <li>• Emergency protective equipment</li> <li>• Contractor safety activities and reporting</li> <li>• Hazardous chemicals and gases, including polychlorinated biphenyl (PCBs) and asbestos</li> <li>• Electrical safety</li> <li>• Drilling or excavating areas containing conduit or cable</li> <li>• Scaffolds, ladders, and safety devices</li> <li>• Tag-out procedures</li> <li>• Work in confined spaces</li> <li>• Fire prevention, detection, and mitigation practices</li> <li>• Housekeeping</li> <li>• Heat stress requirements</li> <li>• Rigging and control of heavy loads</li> <li>• Investigating and reporting accidents, near misses, and minor injuries</li> <li>• Human Performance Evaluation System activities</li> </ul>

**\*A.8 Industry and In-House Operating Experience**

The purpose of this subject area is to enable the candidate or incumbent to use facility and industry experience to improve maintenance performance. Topics for consideration include:

SUBJECT	TOPIC
Operating Experience	<ul style="list-style-type: none"><li>• DOE Order 232.2 AC-1, <i>Occurrence Reporting and Processing of Operations information</i></li><li>• Safety Performance Monitoring System (SPMS) and the Occurrence Reporting and Processing System (ORPS)</li><li>• Internal sources of operating experience information</li><li>• External sources of operating experience information</li><li>• Methods for monitoring the operating experience program effectiveness</li><li>• Initial and continuing training on selected significant industry events</li></ul>

Further guidance on this subject is provided in DOE O 210.2A, *DOE Corporate Operating Experience Program*.



## A.9 Root-Cause Analysis

The purpose of this subject area is to enable the candidate or incumbent to identify, analyze, correct, and prevent recurrence of human and equipment performance problems. Topics for consideration include:

TOPIC	ITEMS TO COVER FOR EACH TOPIC
Program Definitions	<ul style="list-style-type: none"><li>• Events</li><li>• Causal factors</li><li>• Contributing factors</li><li>• Root causes</li><li>• Corrective actions</li></ul>
Root-Cause Analysis Process	<ul style="list-style-type: none"><li>• Data collection</li><li>• Root-cause determination</li><li>• Validation of root cause</li><li>• Effectiveness review</li></ul>
Analytical Processes	<ul style="list-style-type: none"><li>• Cause-and-effect analysis</li><li>• Task analysis</li><li>• Fault-tree analysis</li><li>• Change analysis</li><li>• Barrier analysis</li><li>• Event and causal factor charting</li><li>• Symptom classification technique</li></ul>

**A.10 Facility Chemistry**

The purpose of this subject area is to enable the candidate or incumbent to attain a general knowledge or overview of the facility chemistry program. Topics for consideration include:

SUBJECT	TOPIC
Chemistry	<ul style="list-style-type: none"><li>• Chemistry program objectives</li><li>• Chemistry-related responsibilities of maintenance personnel</li><li>• Control of chemicals potentially harmful to facility equipment</li><li>• Situations in which chemical analyses could aid in determining the cause of facility equipment damage</li><li>• Industry experience related to chemistry-induced equipment problems</li><li>• Effect of maintenance on facility chemistry</li><li>• Radiological impact of corrosion on maintenance activities</li><li>• Waste water treatment systems</li><li>• Makeup water facility</li><li>• Processes used for water treatment and purification and limitations of those processes</li><li>• Effects of entry of foreign materials on facility</li><li>• Requirements for inactive equipment layup and storage following transfer to the facility or during extended shutdowns</li></ul>

Further guidance on this subject area is provided in Training and Qualification of Maintenance Personnel, available in this “Best Practices” Forum.

**\*A.11 Radiological Protection**

The purpose of this subject area is to enable the candidate or incumbent to attain an advanced knowledge of the facility radiological protection program as it relates to maintenance activities. Topics for consideration include:

SUBJECT	TOPIC
Radiological Protection	<ul style="list-style-type: none"> <li>• Policies and procedures related to radiological protection</li> <li>• 10 CFR 835, "Occupational Radiation Protection," DOE</li> <li>• Radiological Control Standard, and company administrative policies concerning the exposure of workers to external and internal radiation, including pregnant females</li> <li>• Radiological responsibilities of maintenance supervisors and maintenance workers</li> <li>• Controls for limiting lifetime exposure</li> <li>• Minimizing dose to workers (time, distance, shielding)</li> <li>• Methods of controlling radioactive contamination at the source and controlling access to radiologically controlled areas</li> <li>• Personnel actions required during unusual radiological situations</li> <li>• Hot particle control during maintenance activities</li> <li>• Use of mockups and pre-briefs to reduce radiation exposure</li> <li>• Methods of minimizing generation of solid radioactive waste and hazardous mixed wastes</li> <li>• ALARA program at the facility</li> </ul>

Further guidance on this subject area is provided in Training and Qualification of Maintenance Personnel, available in this "Best Practices" Forum.

**A.12 Emergency Preparedness**

The purpose of this subject area is to enable the candidate or incumbent to be knowledgeable of overall emergency preparedness activities and specifics as they apply to the maintenance area. Topics for consideration include:

<b>SUBJECT</b>	<b>TOPIC</b>
Emergency Preparedness	<ul style="list-style-type: none"><li>• Emergency plan and implementing procedures</li><li>• Radiological emergencies and associated reporting and notification requirements</li><li>• Responsibilities for communication with the public and the media during an emergency</li><li>• Maintenance and facility functions and responsibilities during emergencies</li><li>• Operation of systems or equipment associated with assigned emergency duties</li><li>• Normal and backup communications system</li><li>• Emergency medical service during radiological emergencies</li><li>• Handling of contaminated and non-contaminated injuries</li><li>• Responsibilities in an emergency exercise or site emergency drill</li></ul>

**\*A.13 Maintenance Training and Qualification**

The purpose of this subject area is to enable the candidate or incumbent to monitor and enhance the effectiveness of the Maintenance Training Program. Topics for consideration include:

SUBJECT	TOPIC
Supervision of Maintenance Training and Qualification	<ul style="list-style-type: none"> <li>• DOE Order 426.2, <i>Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities</i></li> <li>• Policies and procedures concerning training and qualification of maintenance personnel</li> <li>• Monitoring maintenance work practices to identify training deficiencies</li> <li>• Monitoring implementation of maintenance training</li> <li>• Monitoring of training and qualification progress</li> <li>• Identification and feedback of maintenance training needs</li> <li>• Promoting training and qualification commitments and requirements</li> <li>• Selection of properly trained and qualified personnel for independent work assignments</li> <li>• Determining what initial training program is required for new employees</li> <li>• Use of entry-level tests</li> <li>• Development of teamwork</li> <li>• Development of diagnostic skills</li> <li>• Conduct of on-the-job training</li> <li>• Measuring training effectiveness</li> <li>• Use of case-studies to review selected in-house industry events</li> <li>• Training modification (needs) request preparation</li> </ul>

Further guidance on this subject area is provided in Training and Qualification of Maintenance Personnel, available in this “Best Practices” Forum.

**A.14 Subcontractor Maintenance Training Program Coordination**

The purpose of this subject area is to enable the candidate or incumbent to monitor and coordinate where necessary, the subcontractor maintenance training program. Topics for consideration include:

<b>SUBJECT</b>	<b>TOPIC</b>
Supervision of Subcontractor Personnel Training	<ul style="list-style-type: none"><li>• Facility line-management responsibility for subcontractor training</li><li>• Verification of subcontractor qualifications (DOE Order 426.2, Chapter 1, paragraph 3, addresses specific alternatives for subcontractor qualification)</li><li>• Establishment of training and qualification requirements for subcontractor personnel</li><li>• Subcontractor understanding of training and qualification requirements, process, and schedule</li><li>• Implementation of training and qualification requirements for subcontractor personnel</li><li>• Monitoring of subcontractor personnel to verify that training and qualification requirements are being met and are effective</li></ul>

**\*A.15 Conduct of Operations**

The purpose of this subject area is to enable the candidate or incumbent to monitor certain facility operations and comply with directives and policies to achieve safe and reliable facility operations. Topics for consideration include:

SUBJECT	TOPIC
Conduct of Operations	<ul style="list-style-type: none"> <li>• General knowledge of major systems and system interactions</li> <li>• Appropriate facility technical safety requirements (operational safety requirements and technical specifications)</li> <li>• Training on safety-related systems identified in the Facility Safety</li> <li>• Analysis Report (FSAR)</li> <li>• Identification of facility component safety classifications</li> <li>• Facility control during maintenance and refueling</li> <li>• Identification and control of malfunctioning instrumentation</li> <li>• Control of jumpers, lifted leads, and bypasses</li> <li>• Lock-out/tag-out procedures</li> <li>• Facility interfacing procedures at multi-facility sites</li> <li>• Use of emergency communication</li> <li>• Rules for using oral instructions</li> <li>• Independent verification of equipment status</li> <li>• Use of two-way radios at the facility</li> <li>• Control of personnel entry into the control room</li> <li>• Control of facility maintenance activities while operating</li> <li>• Impact that maintenance activities have on facility operations</li> <li>• Impact on facility operation of degraded and out-of-service equipment</li> <li>• Design features needed to mitigate internal (e.g., flooding, high energy line break, fire protection) and external (e.g., seismic, missile) hazards</li> <li>• General categories of design bases for accident analysis</li> </ul>

**A.16 On-site and Off-site Technical Support**

The purpose of this subject area is to enable the candidate or incumbent to become knowledgeable of the facility and technical support staff functions and responsibilities from an overview perspective. Topics for consideration include:

<b>SUBJECT</b>	<b>TOPIC</b>
Facility and DOE Technical Support	<ul style="list-style-type: none"><li>• Overall responsibilities and capabilities of facility engineering and technical support organizations</li><li>• Policies and procedures concerned with technical support related to maintenance</li><li>• Component and system performance tests</li><li>• Special nuclear material controls and responsibilities</li><li>• Surveillance tests, and in-service inspection programs</li></ul>



### A.17 Administrative Requirements

The purpose of this subject area is to enable the candidate or incumbent to be an effective administrator. Portions of this subject may be provided from an overview perspective (e.g., hierarchy of procedures, contracts, public relations). Topics for consideration include:

SUBJECT	TOPIC
Administration Requirements	<ul style="list-style-type: none"> <li>• Hierarchy of procedures and policies (e.g., DOE Orders, facility policies and procedures, maintenance procedures)</li> <li>• Delegation of work, responsibility, and authority within the facility</li> <li>• Policies regarding internal and external communications, including public speeches, written papers, and relations with the news media</li> <li>• Hiring, promotion, and disciplinary policies</li> <li>• Fitness-for-duty program</li> <li>• Equal employment opportunity/affirmative action programs</li> <li>• Employee compensation program</li> <li>• Bargaining unit agreements, negotiating agreements, and handling grievances (if applicable)</li> <li>• Requesting and reviewing proposals, awarding and administering contracts</li> <li>• Obtaining support in legal matters for assigned personnel</li> <li>• Sexual harassment policy</li> <li>• Individual responsibilities in dealing with public sectors and groups</li> </ul>

### A.18 Codes, Standards, and Regulations

The purpose of this subject area is to enable the candidate or incumbent to monitor and provide guidance in the implementation of the requirements of applicable codes, standards, and DOE requirements from an overview perspective. Topics for consideration include:

SUBJECT	TOPIC
Codes, Standards, and Regulations	<ul style="list-style-type: none"> <li>• Code of Federal Regulations (CFR), DOE Orders, generic letters, information notices, and bulletins</li> <li>• Structure and functions of codes, standards, and regulations</li> <li>• Requirements for testing of equipment, conduct of operations, and quality assurance</li> <li>• Radiological protection and exposure limits</li> <li>• Radioactive material receipt and storage</li> <li>• Changes to the facility technical safety requirements (technical specifications or operational safety requirements)</li> </ul>
Other Codes and Standards	<ul style="list-style-type: none"> <li>• Applicable sections of the Nuclear Waste Policy Act of 1982(Public Law 97-425)</li> <li>• Applicable Environmental Protection Agency requirements</li> <li>• Applicable standards of the American Society of Mechanical engineers; The Institute of Electrical and Electronics Engineers, Inc; American National Standards Institute; American Nuclear Society; and American Society for Testing Materials</li> <li>• Occupational Safety and Health Act regulations</li> <li>• Department of Transportation requirements for shipping nuclear materials and radioactive waste</li> <li>• Federal and state regulations regarding pollutants and radioactive releases and any applicable operating criteria</li> <li>• Impact of poor facility performance on DOE budget</li> <li>• Facility design and construction requirements</li> <li>• Local fire regulations and applicable building codes</li> <li>• Role of and interface with the facility operations review committee and offsite review committee</li> </ul>

**\*A.19 Quality Assurance and Quality Control**

The purpose of this subject area is to enable the candidate or incumbent to use quality assurance/quality control programs to enhance operational safety and reliability and to assist in complying with regulatory requirements, standards, and company policies and procedures. Topics for consideration include:

SUBJECT	TOPIC
QA and QC	<ul style="list-style-type: none"><li>• 10 CFR 830.120, Quality Assurance Requirements</li><li>• Applicable procedures implementing QA/QC policies</li><li>• Using quality assurance (QA) and quality control (QC) to enhance operational nuclear safety and reliability</li><li>• Promoting quality performance to do the job right the first time</li><li>• QA deficiency reporting system</li><li>• Root-cause determination</li><li>• Techniques for nondestructive examinations (general familiarization)</li><li>• Criteria for the quality classification of critical systems, structures, and components</li><li>• Maintenance quality control responsibilities</li><li>• Maintaining line responsibility for quality</li><li>• Development and implementation of corrective actions</li></ul>

## A.20 Purchasing

The purpose of this subject area is to enable the candidate or incumbent to understand facility and DOE purchasing and contracting policies from an overview perspective.

Topics for consideration include:

SUBJECT	TOPIC
Purchasing	<ul style="list-style-type: none"> <li>• Policies and procedures for purchasing and contracting</li> <li>• Preparation of documents that specify quality requirements</li> <li>• Preparation of documents that specify design requirements</li> <li>• QA and QC role in purchasing and receipt inspection</li> <li>• QA and QC role in purchasing services</li> <li>• Requirements for purchasing material</li> <li>• Requirements for purchasing services</li> <li>• Contract approval requirements</li> <li>• Procedures for resolution of contractual problems</li> <li>• Classification of material purchases</li> <li>• Provisions for expediting purchases</li> <li>• Standards related to material stores</li> <li>• Policies regarding spare parts inventory</li> <li>• Custodial procedures for equipment transfers</li> <li>• Procedures for updating materials management records and applicable spare parts (e.g. spare parts with a shelf life)</li> <li>• Contractual relationships with subcontractors and vendors</li> </ul>

**A.21 Material Control**

The purpose of this subject area is to enable the candidate or incumbent to obtain general knowledge or overview of how the materials management program supports the conduct of maintenance. Topics for consideration include:

SUBJECT	TOPIC
Material Control	<ul style="list-style-type: none"> <li>• Policies and procedures for materials management</li> <li>• Applicable standards and requirements related to material stores</li> <li>• Administrative control and storage of material and parts</li> <li>• Early identification of needed material, particularly long-lead-time procurement items</li> <li>• Materials and stores personnel responsibilities</li> <li>• Material procurement from facility stores</li> <li>• Identification requirements for material</li> <li>• Material receipt documentation</li> <li>• Locating and procurement of spare parts from Government surplus sources</li> <li>• Preventive maintenance of stored items and shelf life</li> <li>• Disposal of used, outdated, or otherwise unsuitable chemicals, parts, and components</li> <li>• Material certification including material upgrade processes</li> <li>• Return of unused parts or components</li> <li>• Hazardous material storage</li> </ul>

**\*A.22 Fitness-For-Duty Program**

The purpose of this subject area is to enable the candidate or incumbent to identify unacceptable behavior in employees and explain how to deal with it. Topics for consideration include:

<b>SUBJECT</b>	<b>TOPIC</b>
Fitness-for-Duty	<ul style="list-style-type: none"><li>• Fitness-for-duty program policies and procedures</li><li>• Definition of aberrant behavior</li><li>• Reasons for developing supervisory awareness of aberrant behavior in employees</li><li>• Characteristics and recognition of potential aberrant behavior</li><li>• Reporting behavioral changes in an individual employee</li><li>• Interacting with employees who are demonstrating aberrant behavior</li></ul>

**A.23 Budgeting**

The purpose of this subject area is to enable the candidate or incumbent to become knowledgeable in the cost controls area from an overview perspective. Topics for consideration include:

<b>SUBJECT</b>	<b>TOPIC</b>
Budgeting	<ul style="list-style-type: none"><li>• Responsibility for cost control</li><li>• Budget review and approval process</li><li>• Role of budgeting in the achievement of established goals and objectives</li><li>• Budget system used to support goals and objectives</li><li>• Budget concept used by assigned personnel</li><li>• Periodic budget variance reports</li><li>• Preparation and submittal of budget change requests using appropriate procedure</li><li>• Preparation of cost-tracking and reporting documents</li></ul>

**A.24 Document Control and Storage**

The purpose of this subject area is to enable the candidate or incumbent to understand the document control and storage program from an overview perspective. Topics for consideration include:

<b>SUBJECT</b>	<b>TOPIC</b>
Document Control	<ul style="list-style-type: none"><li>• Policies and procedures concerning document control and storage</li><li>• Controlling vendor technical information, including receipt and approval of vendor information, changes to vendor manuals, and approval for use of vendor information</li><li>• Historical record identification, storage, physical protection, and retention requirements</li><li>• Production, approval, and control of as-built drawings</li><li>• Use of controlled drawings and procedures when performing work(detailed understanding of this topic)</li><li>• Filing systems for facility records and drawings</li></ul>



## A.25 Facility Security and Non-radiological Emergencies

The purpose of this subject area is to enable the candidate or incumbent to support facility security program requirements and to mitigate the consequences of non-radiological emergencies. Portions of this subject may be provided from an overview perspective (e.g., security plan, security system, codes, and standards). Topics for consideration include:

TOPIC	ITEMS TO COVER FOR EACH TOPIC
Facility Security	<ul style="list-style-type: none"> <li>• Facility security plan and procedures</li> <li>• Facility security support of the fitness-for-duty program</li> </ul>
Facility Security System and Program, Including Responsibilities for Maintaining the System Equipment	<ul style="list-style-type: none"> <li>• Security policies</li> <li>• Security reporting structure</li> <li>• Vital areas within the facility boundary</li> <li>• Vital area access control system</li> <li>• Administrative requirements for escorted and unescorted personnel access</li> <li>• Portal monitoring</li> <li>• Perimeter security and surveillance requirements</li> <li>• Handling of security safeguards information</li> </ul>
Security Threats and Breaches	<ul style="list-style-type: none"> <li>• Internal security measures</li> <li>• Procedures for forced entry, hostile crowds, and sabotage</li> <li>• Agreements with law enforcement agencies</li> <li>• Internal reporting</li> <li>• External reporting</li> </ul>
Emergencies	<ul style="list-style-type: none"> <li>• Procedures for tornadoes, earthquakes, floods, or other natural disasters</li> </ul>
Fires	<ul style="list-style-type: none"> <li>• Codes and standards related to fires</li> <li>• Fire prevention planning and response action</li> <li>• Fire protection work control procedures</li> <li>• Fire brigade organization and responsibilities</li> <li>• Fire fighting strategies</li> <li>• Transient fire loads</li> <li>• Fire barrier requirements</li> <li>• Fire alarms, extinguishers, and hose stations in normal work areas</li> <li>• Offsite fire fighting support</li> </ul>

## APPENDIX B-JOB FAMILIARIZATION

### B.1 Job Familiarization

Time spent in various facilities and in facility work spaces improves job performance by adding perspective about other organizations. In addition, the supervisor trainee can use this time for the development of a personal philosophy consistent with the facility's philosophy. Management should arrange for such visits and discussions to familiarize the candidate or incumbent with responsibilities and support functions in various areas.

These visits and discussions should be structured using established objectives such as the following:

TOPIC	ITEMS TO COVER FOR EACH TOPIC
Facility Philosophy and Commitments Regarding Operational Safety and Reliability	<ul style="list-style-type: none"> <li>• Nuclear safety, facility reliability, and efficiency of manager's facility</li> <li>• Standards of quality</li> <li>• Defense-in-depth concept (e.g., quality maintenance maintains the constructed design of the facility and enables the facility to be operated safely and reliably)</li> <li>• Maintenance impact on safety and control functions</li> <li>• Resource commitments</li> <li>• Reporting of facility problems, including technical safety requirement violations</li> <li>• Radiation safety and industrial safety</li> </ul>

An important phase of the candidate's job familiarization results from understanding the purpose of other organizations and the role they play within the facility. The candidate should allot time to meet with personnel from other organizations at the facility. A sample list of organizations and individuals to be visited is listed below:

TOPIC	ITEMS TO COVER FOR EACH TOPIC
Organizations or Individuals That Might be Visited:	<ul style="list-style-type: none"> <li>• Facility security</li> <li>• Cost accounting and budgeting</li> <li>• Industrial relations</li> <li>• Maintenance managers</li> <li>• Emergency planning/preparedness coordinators</li> <li>• Reactor engineering, fuel handling, and waste management personnel</li> </ul>

	<ul style="list-style-type: none"> <li>• Shutdown manager/planner</li> <li>• Procurement/warehousing manager</li> <li>• Operations manager</li> <li>• Construction liaison</li> <li>• Event reporting staff</li> <li>• Training management and staff</li> <li>• Personnel department/group</li> <li>• Industrial safety group</li> <li>• Inservice inspection group</li> <li>• Independent safety review groups</li> <li>• Quality assurance/quality control group</li> <li>• Radiological protection group</li> <li>• Chemistry group</li> <li>• Planning and scheduling group</li> <li>• Purchasing group</li> <li>• Procedure writers group</li> <li>• Onsite contract group</li> <li>• Technical support group</li> <li>• Facility operations review committee</li> </ul>
Individual Discussions	<ul style="list-style-type: none"> <li>• Meet individuals with whom they will be communicating as a member of the facility management team</li> <li>• Discuss how managers view their own roles in supporting facility operations during normal and emergency conditions</li> <li>• Identify problems experienced by support groups when coordinating with the facility, and how these problems can be minimized</li> </ul>

These visits and discussions may be structured to complete all or portions of the training associated with selected subjects described in Appendix A. (For example, most of subject area 20, "Purchasing," and subject area 21, "Material Control," could be accomplished during the procurement/warehousing visit and discussions.)

It is recognized that facilities may use other methods to accomplish the goals of supervisor job familiarization that are equally acceptable. Regardless of the method used, it should be structured using established objectives to verify that the intent of the job familiarization phase is met.

## **B.2 On-The-Job Familiarization**

During this phase, the candidate works closely with the incumbent supervisor and, if appropriate, department managers in their day-to-day job functions. Participation in decision making and short assignments to various facility departments are also recommended. The following are some of the benefits that could be derived from on-the-job familiarization:

- Specific knowledge of job functions
- Familiarization with the technical functions of the various departments and how they interface
- Decision making considerations and techniques
- Improved self-confidence regarding readiness to perform the job and ability to deal with new situations and other groups.